

**Title** Methanol-reforming fuel cells **Inventor Name** Iwamoto, Kazuo; Mori, Toshikatsu; Honchi, Akio; Tamura, Koki **Patent Assignee** Hitachi, Ltd., Japan  
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**Patent Information**

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**Abstract** The title cells have MeOH-reforming catalyst covered with a porous oxidn.-resistant material filled in the gas passages of their porous C anode plates. The covering material (PTFE) is permeable to MeOH vapor but not to the acidic electrolyte of the cell. A H<sub>3</sub>PO<sub>4</sub> fuel cell using Cu-Zn catalyst filled in porous PTFE tubes (max. pore size: few tens microns, porosity 50-80%) had a longer lifetime than a cell using the same catalyst without the tubes. **Document Type** Patent **Language** Japanese

**Title** Investigation of the in-situ oxidation of methanol in fuel cells **Author** Landsman, D. A.; Luczak, F. J. **Organization** Power Syst. Div., United Technol. Corp., South Windsor, CT, USA **Publication Source** Report (1981), FCR-3463; Order No. AD-A105947, 32 pp. **Avail.**: NTIS

From: Gov. Rep. Announce. Index (U. S.) 1982, 82(4), 713 **Abstract** The direct anodic oxidn. and internal reforming were examd. as ways of using MeOH [67-56-1] as fuel in a H<sub>3</sub>PO<sub>4</sub> fuel cell. Even with the best of the catalysts, anode polarization at practical c.ds. is 300 mV higher on MeOH than on H. Unreacted MeOH which diffuses across the cell can cause severe polarization of the cathode. A fuel cell will generate sufficient waste heat to sustain the MeOH-steam reforming reaction. Thus, thermally integrated, internal reforming is a feasible alternative to external reforming. The reforming catalyst is preferably located in sep. chambers built into the stack, since this prevents H<sub>3</sub>PO<sub>4</sub> from attacking the reforming catalyst and MeOH from migrating to the cathode. A 2 .times. 2 in. fuel cell, running on the gaseous product from a subscale reformer operating at 400; F gave 0.624 V at 200 A/ft<sup>2</sup> (85% MeOH/50% air utilization). From the standpoint of efficiency, internal reforming is superior to direct oxidn. **Document Type** Report **Language** English